GIBBONS 1-1

CLAIMS

What is claimed is:

1. In a wireless communications network, a method in a base station to communicate with a remote unit that is in a sleep mode, the remote unit having a unique identification value, comprising the steps of:

establishing a periodic reference instant at the base station and at the remote station;

determining a delay interval following said periodic reference instant at the base station, said delay interval being derived from said unique identification value of said remote unit; and

transmitting a message from the base station to the remote unit at a second instant following said delay interval, said remote unit having changed from said sleep mode to a standby mode after said delay interval.

2. The method of claim 1, wherein said base station is part of a wireless discrete tone communications system.

3. The method of claim 1, wherein said periodic reference instant is established by a beginning subframe count instant that is incremented by a packet count value at the base station and at the remote unit.

4. The method of claim 3, wherein said delay interval is determined by a value N of a quantity of M least significant bits of said unique identification value of said remote unit, the delay interval being an interval required for the occurrence of a plurality of N of said beginning subframe count instants.

5. The method of claim 4, wherein said remote unit changes from said sleep mode to a standby mode after said delay interval.

6. In a wireless communications network, a method in a base station to communicate with a remote unit that is in a sleep mode, the remote unit having a unique identification value, comprising the steps of:

establishing a periodic reference instant at the base station and at the remote station;

determining a delay interval following said periodic reference instant at the base station, said delay interval being derived from said unique identification value of said remote unit;

attempting to initiate a communication from said base station to said remote unit;

concluding at the base station that the remote unit is in a sleep mode if said attempting step fails to initiate communications with the remote unit;

waiting for said delay interval following said periodic reference instant at the base station; and

transmitting a message from the base station to the remote unit at a second instant following said delay interval, said remote unit having changed from said sleep mode to a standby mode after said delay interval.

7. The method of claim 6, wherein said base station is part of a wireless discrete tone communications system.

8. The method of claim 6, wherein said periodic reference instant is established by a beginning subframe count instant that is incremented by a packet count value at the base station and at the remote unit.

9. The method of claim 8, wherein said delay interval is determined by a value N of a quantity of M least significant bits of said unique identification value of said remote unit, the delay interval being an interval required for the occurrence of a plurality of N of said beginning subframe count instants.

10. The method of claim 9, wherein said remote unit changes from said sleep mode to a standby mode after said delay interval.

11. A highly bandwidth-efficient communications method in a base station to communicate with a remote unit that is in a sleep mode, the remote unit having a unique identification value, comprising the steps of:

establishing a periodic reference instant at the base station and at the remote station;

determining a delay interval following said periodic reference instant at the base station, said delay interval being derived from said unique identification value of said remote unit;

receiving at a base station a spread signal comprising an incoming data traffic signal spread over a plurality of discrete traffic frequencies;

adaptively despreading the signals received at the base station by using despreading weights;

attempting to initiate a communication from said base station to said remote unit;

concluding at the base station that the remote unit is in a sleep mode if said attempting step fails to initiate communications with the remote unit;

waiting for said delay interval following said periodic reference instant at the base

station; and

transmitting at the base station to the remote unit a spread signal comprising an outgoing data traffic signal spread over a plurality of discrete traffic frequencies.

12. The method of claim 11, wherein said base station is part of a wireless discrete tone communications system.

13. The method of claim 11, wherein said periodic reference instant is established by a beginning subframe count instant that is incremented by a packet count value at the base station and at the remote unit.

14. The method of claim 13, wherein said delay interval is determined by a value N of a quantity of M least significant bits of said unique identification value of said remote unit, the delay interval being an interval required for the occurrence of a plurality of N of said beginning subframe count instants.

15. The method of claim 14, wherein said remote unit changes from said sleep mode to a standby mode after said delay interval.

16. A remote unit for a personal wireless area network comprising:

a receiver;

an AC power supply coupled to the receiver and supplying power to the receiver;

a battery-backup power supply coupled to the receiver, the battery-backup power supply becoming operative to supply power to the receiver when the AC power supply fails; and

a controller coupled to the receiver, the AC power supply and the battery-backup power supply, the controller detecting when the AC power supply fails and in response controls the receiver and the battery-backup power supply by invoking a sleep mode of operation, the sleep mode operation being periodically interrupted by the controller controlling the receiver and the battery-backup power supply to enter a standby mode of operation in which the receiver scans for a CONNECT message indicating an incoming call, the controller controlling the sleep mode and the standby mode of operations based on a frame count that is generated from an identification number of the remote unit.

17. The remote unit according to claim 16, wherein the receiver scans for a connect message for a predetermined number of subframes of a TDD timing structure.

18. The remote unit according to claim 17, wherein the predetermined number of

subframes equals 3.

19. The remote unit according to claim 17, wherein when the remote unit enters the standby mode, the remote unit reacquires synchronization to the TDD timing structure.

20. The remote unit according to claim 19, wherein the remote unit reacquires synchronization to the TDD timing structure in about 34 subframes.

21. The remote unit according to claim 19, wherein the remote unit scans for a CONNECT message at a subframe that is related to an identification number of the remote unit.

22. A method for reducing power consumption of a remote unit in a PWAN system, comprising the steps of:

powering a remote unit using a battery backup power supply when an AC power supply fails at the remote unit;

entering a sleep mode of operation at the remote unit, the sleep mode having a reduced power consumption for the battery backup power supply;

entering a standby mode of operation at the remote unit a predetermined period of time after entering the sleep mode of operation

scanning for a CONNECT message indicating an incoming call for the remote

unit; and

reentering the sleep mode of operation when no CONNECT message is received.

23. The method according to claim 22, further comprising the step of synchronizing the remote unit to a TDD timing structure before the step of entering the standby mode of operation.

24. The method according to claim 23, wherein the predetermined period of time is a predetermined number of subframes after a boundary subframe of the TDD timing structure.

25. The method according to claim 24, wherein the predetermined number of subframes is based on an identification number of the remote unit.

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